

Notes from the 02/14/06 MI BPM Upgrade Meeting
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These notes can be found in Beams docDB #1526.

Agenda as announced:

Project Announcements

All Experimenters Meeting Talk (proposed)
Tasks/measurements in MI40 before shutdown
Hardware status:
Combiner Board status
Transition Board
Transition Board I/O
Timing Board
Cables, crates, other.
Software status:
Front-end software
Online software
Validation
AOB

0. Project Announcements

- The MI BPM project has been asked to give an update at an All Experimenters Meeting. We will be thinking about when we will be ready and what to show and will schedule it accordingly.
- The MI BPM MOU for support of the system is in draft and will be sent to everyone soon.
- It is not wise (I think Bob used the word foolish) to replace the entire MI BPM electronics during the shutdown and come up with the new system. However, we should do all that we can to be prepared for rapid installation and commissioning as soon as beam is established after the shutdown.

1. Tasks/measurements in MI40 before shutdown

- Denton Morris showed some plots of scans of the apertures made at different locations using the new BPM electronics. Most of the BPMs are centered at 0 but some are many mm away from 0 and one is as far as 8 mm from 0. There was some discussion of the results including some questions as to what offsets (if any) have been applied to the new data. The polarity is thought to be correct in all cases (which is probably a small miracle).

- One of the plots is included in beams-doc-1526. The text that goes along with it is "This is a vertical scan of the aperture at 411 using Numi beam at 8 GeV (6 batches of 84 bunchs with a total intensity of 3×10^{13} protons). The desired position relative to the old BPM system was 0.0mm"
- The orbit smoothing program has been run using the new data.
- There are many ideas of where debugging can occur to track down any reason for the offsets. This includes inserting RF signals at various points in the input signal path.
- Peter Prieto showed some slides of FLASH/TBT data. Some of the data was taken at intensity of about 1×10^{12} per batch and some at 4×10^{12} per batch. Measurements were taken at different BPMs that had different cable lengths and with low and medium gains on the transition boards. The resolutions (1 sigma) vary from 23 to about 300 microns. The requirement for this mode (53 MHz, wideband) is 100 microns (3 sigma) or 33 microns (1 sigma).
- There was discussion of how to get a systematic measurement of the resolutions under different beam intensity and gain conditions. As well as how to set the gains and how much flexibility is available in the system to set gains. And whether each board (4 BPMs, 8 channels) should have different gain settings to take into account different attenuation due to cable lengths or other causes.
- According to Peter the FLASH, RAW and TBT modes are all working as is triggering with BES and MI BSYNC. SAFE MODE is yet to be implemented.

2. Combiner Board

- 30 more boards are ready for installation at the next available opportunity.

3. Transition Board

- One more week for bids for the fabrication of the 72 boards.
- The filters have arrived and they will be matched and paired in preparation for the transition board fabrication. They should be ready for the fabrication.

4. Transition Board I/O

- Documentation, manual and schematics are being prepared.

- The "improved version" is still under discussion. A small group will convene to recommend what to build. One significant constraint is that the finished boards must be ready for installation June 1.

5. Cables, crates, other H/W.

- Cables are arriving and are being tested. Most are due by mid-month (February). Some failures have been found and these will be returned and replaced.

- 15 DAWN VME subracks were delivered last week, after some discussions with the company.

- Requisitions for air dams and backplanes are being prepared or information is being gathered in preparation for writing the requisitions.

- Work continues on remote crate control. Optilogic may be required.

5. Front-end software

- Tracking down and fixing bugs as Bob and Peter find them.

- Offsets are in the front-end software and are ready to be implemented. Also have the placeholders for the extra BPM channels that will be needed when the new wide aperture quads are installed during the shutdown.

- Two different house delays is implemented.

- The new setup in MI30 is installed.

- Alberto asked when we should declare MI40 functional and part of production so that some experience can be gained from running it. Everyone agreed that we should do this if possible before the shutdown but there was not specific date chosen to start this.

6. Online software

- Fixing bugs. Brian is making changes to the libraries as necessary.

- Changes are being made to take into account the offsets and how they are being implemented.

- I43 changes being requested are being implemented by Bob West. This include the two house delays, among other things.

- Some discussion about trying to achieve consistency in timing -- buckets, half-buckets, turns, etc. At the very least everything should be labelled correctly.

- The raw mode will go to the diagnostics page as requested.

7. Preparation for Installation/Commissioning

- Marv has been making measurements in all the buildings to get delays of beam signals vs AA and BES. These will be used to speed up the commissioning of the new systems.
- Phase measurements have been found and these can be compared to newer measurements.
- All of this work will be put together and placed into docDB.

8. AOB